

ABSTRACT OF THE DISCLOSURE

5        A system including an induction machine with a  
toroidally wound stator and a squirrel cage rotor is  
presented. The toroidally wound stator has a plurality of  
phase windings. A position sensor may be operatively  
connected to the induction machine for providing a position  
10 indication that is indicative of a relative position of the  
rotor and the stator. The system also includes an inverter  
having a plurality of solid-state switches and a control  
system. The inverter has the same number of phases as the  
toroidal induction machine. The inverter is connected to  
15 selectively energize the phase windings. A programmable  
microprocessor, such as a digital signal processor, is  
operatively connected to the induction machine and includes  
a program to implement vector control of the induction  
machine. The microprocessor can also control the inverter  
20 so that the induction machine operates with a predetermined  
number of poles using pole phase modulation.